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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,851	07/25/2003	William J. Usab JR.	1100.8	2643

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EXAMINER	
VERDIER, CHRISTOPHER M	
ART UNIT	**PAPER NUMBER**
3745	

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/627,851	USAB ET AL.	
	Examiner	Art Unit	
	Christopher Verdier	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *March 30, 2006, June 28, 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6-20* is/are pending in the application.

4a) Of the above claim(s) *11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6 and 13-16* is/are rejected.

7)☒ Claim(s) *3,4,7-10, 12, and 17-20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 March 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3-30-06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Applicant's Amendments dated March 30, 2006 and June 28, 2006 have been carefully considered but are non-persuasive. Claims 1-4 and 6-20 are pending. Most of the New Sheets of Drawings as well as the Replacement Sheet for figure 2 are acceptable. However, figures 8 and 10A contain new matter as set forth later below. Applicant's argument (see page 24, first paragraph of the Remarks dated March 30, 2006) that the subject matter of claims 8 and 9 is shown in figure 2 is persuasive, and the objection to the drawings as not showing the features of claims 8 and 9 is withdrawn. The abstract has been amended to overcome most of the informalities set forth in the Office action of September 30, 2005. The specification has been amended to correct most of the informalities set forth in the Office action of September 30, 2005, and claim 7 has been amended so that the objection to the specification as failing to provide antecedent basis for claim 7 is overcome. However, portions of the specification contain new matter as set forth later below. The claims have been amended to adopt the examiner's suggested claim language, to overcome the informalities therein, and to overcome the rejections set forth in the Office action of September 30, 2005. Applicant's cooperation is correcting these matters to simplify the outstanding issues is noted with appreciation.

Applicant's argument that claim 1 as amended defines over United Kingdom Patent 2,032,048, the article "Wing Rotation and the Aerodynamic Basis of Insect Flight", and the article "A Biomimetic Propulsor for Active Noise Control: Experiments" has been carefully considered and is persuasive. Applicant's argument that claim 15 as amended defines over United Kingdom Patent 2,032,048, the article "Wing Rotation and the Aerodynamic Basis of Insect Flight", and the article "A Biomimetic Propulsor for Active Noise Control: Experiments"

has been carefully considered and is not persuasive. Claim 15 has been amended to broadly recite that the parameter of the flow directed into the inlet of the cascade is varied. In each of United Kingdom Patent 2,032,048, the article "Wing Rotation and the Aerodynamic Basis of Insect Flight", and the article "A Biomimetic Propulsor for Active Noise Control: Experiments", the parameter of the flow that directed into the inlet of the cascade that is varied may be considered to be the state of separation and reattachment that the boundary layer is in, as well as the velocity of the boundary layer.

With regard to the obviousness-type double patenting rejections, these rejections remain. Applicant states that although it is not conceded that there are proper on the merits, an appropriate response will be made when the present application is found to be otherwise allowable.

Applicant's Response to the Requirement for Information dated March 30, 2006 has been carefully considered. The examiner concurs with Applicant that the Proposal N021-0901 to perform work was not submitted more than one year before the effective filing date of the present application and that an issue of "on sale" activity under 35 USC 102(b) is therefore not raised. Applicant is thanked for providing the Response to the Requirement for Information.

Applicant's comment that claim 11 should be reinstated is noted. Claim 11 is not reinstated at this time because the claims are not allowable. Applicant should note, however, that

in claim 11, line 1, "said axial flow impeller" is unclear as to whether the first or the second impeller is referred to.

Drawings

The drawings filed March 30, 2006 are objected to because new figure 8 contains new matter. Figure 8 shows the hub 32' being smaller than the hub 32 in figure 2. However, paragraph 50 of the specification indicates that the stator can be replaced with a counter-rotating blade. Figure 8 should not include any portion of a hub since the specification discloses that the stator can be replaced with a counter-rotating blade. New figure 10A shows the chord length of the blades 26 gradually increasing in each group. This is new matter because there is no antecedent basis for this in the original drawings or specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings filed March 30, 2006 are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: " 26' ". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The amendment filed March 30, 2006 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

Paragraph 50, fifth and sixth to last lines, which state that the hub 32' is shorter compared to the hub 32 in figure 2, adds new matter. Since paragraph 50 of the specification indicates that

the stator can be replaced with a counter-rotating blade, there should not be any mention of a hub in these lines.

The paragraph added after paragraph 51, in lines 17-18 and 19-21, states that the chord length of the blades within each group gradually increases, with the chord lengths being 0.9c, 1.0c, 1.1c, 1.2c, 1.1c, 1.0c, and 0.9c, adds new matter. There is no support in the original application for these features.

The paragraph added after paragraph 51, in lines 35-39, states that the spacing between adjacent blades in each group might be 0.9c, 1.0c, 1.1c, 1.2c, 1.1c, 1.0c, and 0.9c between successive pairs of blades in each group, adds new matter. There is no support in the original application for these features.

Applicant is required to cancel the new matter in the reply to this Office Action.

The abstract of the disclosure is objected to because it contains the legal term "said" (line 10), which should be deleted. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities: Appropriate correction is required.

In paragraph 60, line 4, "152" should be changed to -- 153 --.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 12, line 6, "said impeller" is unclear if this refers to the axial flow rotor in claim 12, line 2, or not.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by United Kingdom Patent 2,032,048 (figure 2). Disclosed is an inherent method of controlling the pressure of a fluid flow, the method comprising the steps of providing a plurality of lifting elements 14 spaced from each other in a cascade, each lifting element having an airfoil cross-section that provides lift as fluid travels relative thereto, directing the fluid into the inlet of the cascade, and varying a parameter of the flow relative to each lifting element in repeating cycles to cause the flow

relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle. The varied parameter of the flow is the state of separation and reattachment that the boundary layer is in, as well as the velocity of the boundary layer.

Claims 15-16 are rejected under 35 U.S.C. 102(b) as being anticipated by the article "Wing Rotation and the Aerodynamic Basis of Insect Flight". See figures 1A and 1B, and the abstract. Disclosed is an inherent method of controlling the pressure of a fluid flow, the method comprising the steps of providing a plurality of lifting elements (either the model wings in figure 1A or the actual insect wings) spaced from each other in a cascade, each lifting element having an airfoil cross-section that provides lift as fluid travels relative thereto, directing the fluid into an inlet of the cascade (the cascade of insect wings themselves inherently have an inlet, and varying the parameter of the flow relative to each lifting element in repeating cycles to cause the flow relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle. Concerning claim 16, the insect flies in air, which has gusts, which inherently varies the magnitude of the velocity of the flow entering the inlet of the cascade, the direction of velocity of the flow entering the inlet of the cascade, and swirl in the flow entering the inlet of the cascade. The varied parameter of the flow is the state of separation and reattachment that the boundary layer is in, as well as the velocity of the boundary layer.

Claim 15 is also rejected under 35 U.S.C. 102(a) as being anticipated by the article "A Biomimetic Propulsor for Active Noise Control: Experiments". See page 1, the last paragraph which bridges onto page 2, and figure 2. Disclosed is an inherent method of controlling the

pressure of a fluid flow, the method comprising the steps of providing a plurality of lifting elements (the blades in figure 2) spaced from each other in a cascade, each lifting element having an airfoil cross-section that provides lift as fluid travels relative thereto, directing the fluid into an inlet of the cascade, and varying the parameter of the flow relative to each lifting element in repeating cycles to cause the flow relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle. The varied parameter of the flow is the state of separation and reattachment that the boundary layer is in, as well as the velocity of the boundary layer.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 6, and 14 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable all over claim 9 of copending Application No. 10/702,272. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 9 of the copending application 10/702,272

"anticipates" application claims 1-2, 6, and 14. Accordingly, application claims 1-2, 6, and 14 are not patentably distinct from claim 9 of copending application 10/702,272. Here, claim 9 of copending application 10/702,272 requires plural second lifting elements having an airfoil cross section arranged in a second cascade around the hub, the airfoils in the second cascade having at least one geometric property for controlling the parameter by varying circumferentially or radially or both from element to element, with the second cascade including at least one of a stator with plural stationary blades and a second axial flow impeller having plural impeller blades mounted for rotation on the axis in a direction opposite to the direction of rotation of the first impeller, while claims 1 and 2 of the instant application do not require these features. Thus it is apparent that the more specific claim 9 of copending application 10/702,272 encompasses application claims 1-2, 6, and 14. Following the rationale in *In re Goodman* cited in the preceding paragraph, where applicant has once been granted a patent containing a claim for the specific or narrower invention, applicant may not then obtain a second patent with a claim for the generic or broader invention without first submitting an appropriate terminal disclaimer. Note that since copending application claims 1-2, 6, and 14 are anticipated by claim 9 of copending application 10/702,272 and since anticipation is the epitome of obviousness, then application claims 1-2, 6, and 14 are obvious over claim 9 of copending application 10/702,272.

Claim 13 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 9 of copending Application No. 10/702,272 in view of Seymour 3,169,747. Claim 9 of the copending application claims an apparatus substantially as claimed as set forth above, but does not claim that the device includes

plural stages, each stage including the first and second cascade, such that the second cascade includes a stator with plural stationary lifting elements arranged around the axis, and such that flow exiting the outlet of the axial flow impeller of one stage is directed to the stator of a stage downstream thereof.

Seymour (figure 1-2) shows a compressor of a gas turbine engine having lifting elements (R1-R6) arranged around a hub 33 capable of rotating on an axis and forming a first cascade in the form of an axial flow impeller, with a second plurality of lifting elements (S1-S6) having an airfoil shaped cross section arranged in a second cascade around the hub, with plural stages, each stage including the first and second cascade, such that the second cascade includes a stator with plural stationary lifting elements arranged around the axis, and such that flow exiting the outlet of the axial flow impeller of one stage is directed to the stator of a stage downstream thereof, for the purpose of increasing power.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the apparatus of claim 9 of copending application 10/702,272 such that it includes plural stages, each stage including the first and second cascade, such that the second cascade includes a stator with plural stationary lifting elements arranged around the axis, and such that flow exiting the outlet of the axial flow impeller of one stage is directed to the stator of a stage downstream thereof, as taught by Seymour.

Claims 15-16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 12 and 13, respectively, of copending Application No. 10,702,272 in view of United Kingdom Patent 2,032,048. Claims 12 and 13 of the copending application 10/702,272 claim a method of controlling the pressure of a fluid flow substantially as claimed, including providing a plurality of lifting elements spaced from each other in an inherent cascade, that provide lift as fluid travels relative thereto, and varying the parameter of the flow relative to each lifting element in repeating cycles to cause the flow relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle, with the parameter being at least one of the magnitude of the velocity of the flow entering the inlet of the cascade, the direction of the velocity of the flow entering the inlet of the cascade, and the swirl in the flow entering the inlet of the cascade.

However, claims 12 and 13 of the copending application 10/702,272 do not claim each lifting element having an airfoil cross-section and do not claim directing the fluid into an inlet of the cascade.

United Kingdom Patent 2,032,048 (figure 2) shows a method of controlling the pressure of fluid flow, the method comprising the steps of providing a plurality of lifting elements 14, with each lifting element having an airfoil cross-section, and directing the fluid into the inlet of the cascade, with the flow relative to each lifting element being caused to begin to separate from the lifting element and then reattach thereto during each cycle, for the purpose of providing enhanced lift as fluid travels relative to the airfoils.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the method claims 12 and 13 of copending application 10/702,272 such that each lifting element has an airfoil cross-section and such that the fluid is directed into an inlet of the cascade, as taught by United Kingdom Patent 2,032,048.

These are provisional obviousness-type double patenting rejections because the conflicting claims have not in fact been patented.

Allowable Subject Matter

Claims 3-4, 7-10, 12, and 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C.V.
September 17, 2006

Christopher Verdier
Primary Examiner
Art Unit 3745